Small Business Innovation Research/Small Business Tech Transfer

Upset Prevention and Recovery for Unimpaired and Impaired Aircraft, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

The proposed project will develop and deliver a software system that integrates tools required for a complete analysis of loss-of-control incidents. The system will include a graphical user interface that provides easy access to symbolic and numerical computing tools that support aircraft modeling, nonlinear dynamic analysis and control analysis; sophisticated data base management; and visualization. We also propose and will implement an innovative methodology and associated computer tools for analysis and control synthesis in the context of upset prevention and recovery for unimpaired and impaired aircraft. Our approach will address: aerodynamic modeling of aircraft operating outside of the normal flight envelope, multi-mode operation of aircraft, automated assembly of analytical and simulation models -- including real time models, analytical methods and tools for identifying conditions for departure from controlled flight and identification of 'safe' operating states, and analytical methods and tools for identifying the set of recoverable states and associated recovery strategies. The goal is to provide easy to use, verifiable design software to improve commercial flight safety.

Primary U.S. Work Locations and Key Partners

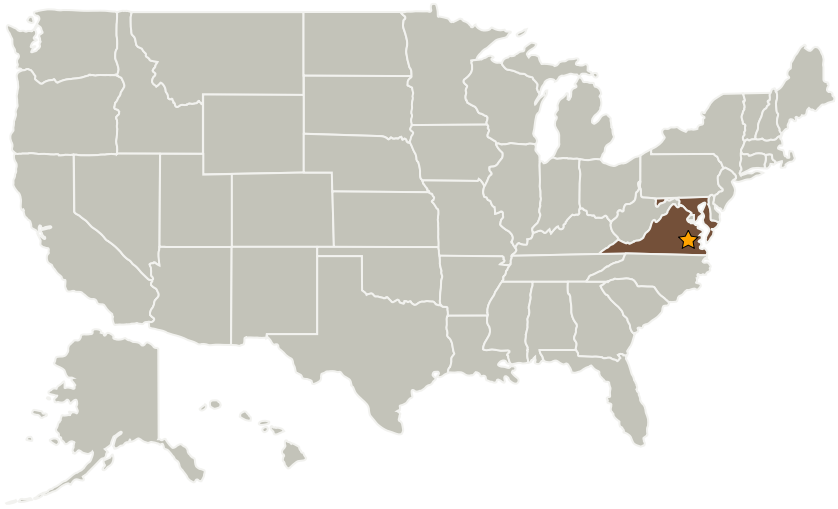

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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Techno-Sciences, Inc.	Supporting Organization	Industry	Beltsville, Maryland

Primary U.S. Work Locations	
Maryland	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors